

ENERGY REPORT

June 25, 2007

1. Introduction

By far the largest influence on energy use (electricity, heating and transportation fuel) is weather. A comparison of key weather indicators (heating and cooling degree days and the number of snow and ice events in a given year) with energy use shows a direct relationship to the colder the heating season, the warmer the cooling season and the more winter events, the higher the energy used to provide vital town services to Natick residents. Although we do not have control over the weather and our overall energy purchases, we do have a say in making sure the energy we use is used efficiently and the energy purchased is the best value possible. By committing to competitive volume purchases of energy, and employing energy conservation efforts, we are effectively holding down the ever-increasing costs and impacts of fossil fuel-based energy usage.

This report is intended to summarize our recent and ongoing efforts to conserve energy and minimize associated costs. It should also be noted that a number of energy efficient measures were implemented in conjunction with construction of the municipal complex during the mid-1990. For the purpose of this report we've grouped the energy efficiency efforts into three categories: Building Heating and Air Conditioning and Electricity Use; Vehicle Fuels; and Energy Source Cost. A fourth category has been included to identify opportunities for further improvement.

2. Building Heating and Air Conditioning and Electricity Use

All properties in municipal use, and some of our properties that we rent to private entities, have some type of system control of internal temperature and ventilation. Six of the eight buildings under management by Facility Services for Schools have Direct Digital Control system with night time and weekend setbacks for building temperatures. On the general government side, all heating, ventilation and air conditioning (HVAC) systems in all buildings managed by Building Maintenance are controlled by a central Energy Management System ("EMS") operated locally or remotely using the intranet and a town computer. The EMS can remotely control individual room temperature during the day and setback temperatures at night and on weekends. Both the school and general government building maintenance departments have contracts for scheduled preventative maintenance for building heating, ventilation and air conditioning systems to optimize the efficiency of this equipment.

In addition to the system controls that promote energy efficiency, there are several individual energy efficiency and cost improvements worth noting, including:

1. An ice compressor was installed at the library which allows ice to be made at night and used during the day for air conditioning. Ice is made during off peak hours when energy costs are lower. The use of ice compressor cooling system technology is limited to larger buildings with either strong structure roof support or large unoccupied areas on the ground. The equipment is heavy and can occupy large areas and therefore has limited use for other town buildings.

2. Infrared heaters were installed in the vehicle garage area at the main fire station and vehicle garage at the Department of Public Works facility. Radiant heat is an efficient way to keep both people and equipment warm while working or occupying large areas subject to occasional open doors in cold weather.
3. The Facility Service for Schools installed an electronic air and fuel modulating control on two of the large boilers at the High School resulting in savings in fuel use; they also installed energy efficient uni-ventilators in all new classrooms.
4. Instructions have been given to staff and custodians to turn off inside lights when rooms and building areas are not in use.
5. All outside lighting is on light and time sensors.
6. Computers use screen savers and staff have been instructed to turn off computers at night and on weekends. New computer equipment is purchased with Energy Star certification when available. The School Department is now sending a “shutdown “signal to all system computers each night.
7. New copiers use a “sleep” mode to conserve energy.
8. Town buildings have completed the lighting re-lamping program with N-Star. Under the program, N-Star completed a lighting energy audit focused on replacing old fluorescent lamps with high efficiency super saver lamps and ballasts. N-Star paid for 80% of the replacement cost and all fixtures were replaced with a three year or less payback period. In total, about \$300,000 in replacement cost was completed in town buildings with N-Star paying 80% of the total amount. The new lamps use 20% to 40% less energy and last up to twice as long before being replaced.
9. Light fixtures that were not eligible for the N-Star replacement program were replaced with energy efficient compact fluorescent bulbs. Street lights and traffic signals use the most efficient light sources in the market place: high pressure sodium, metal halides and light emitting diodes (LED).
10. All windows at the Bacon Free Library have been replaced with new energy efficient windows using state grant fund to pay for the improvements.
11. The ceiling in the ice rink has been insulated and the ice compressor has been upgraded to a more efficient system.

3. Vehicle Fuels

The fuel efficiency of the vehicle fleet is a function of the vehicle and fuel, as well as driving habits and vehicle maintenance. The town has looked at opportunities to replace gas vehicles with alternative fuel vehicles and has determined that, without a substantial incentive program (such as grants), cost-effective replacement opportunities are limited

to a small subset of the fleet. Specifically, as gas prices approach a level where the payback for purchasing the more expensive alternative fuel (hybrid) Sports Utility Vehicles for police and fire could be 5 years or less, it may make be good business decision for the town to consider hybrids for future SUV purchases.

Our excellent vehicle maintenance program allows the town to efficiently reuse vehicles as “hand-me-downs” from the police and fire departments to DPW, schools, and the inspectional programs. Police and fire cars and SUVs are held until they accumulate about 80,000 plus miles, after which time they are then given to other departments to use. Managed this way, vehicles are used by the town for 10 years or more.

The town has also looked at purchasing alternative fuels like Compressed Natural Gas (CNG) and Bio-diesel. Both are expensive alternatives in terms of fuel and vehicle price as well as necessary infrastructure improvements (such as provision of fuel depots) and do not appear to be cost-effective alternatives at this time.

The town has implemented several measures to conserve fuel by focusing on vehicle maintenance and driving habits to increase miles per gallon, including:

1. Encouraging coordinated trip scheduling among staff.
2. Enforcing the unnecessary idling rules.
3. Completing preventative maintenance work on vehicles.
4. Complying with state and federal requirements using only Ultra Low Sulfur Diesel Fuel (ULSD) and buying new diesel trucks that meet the 2007 diesel engine emission specification.
5. Going beyond state and federal requirements to retrofit diesel vehicles with add-on emission controls using grant monies from the state to fund the purchase and installation of the control equipment.

4. Energy Source Costs

The town uses a competitive bid process to purchase transportation and heating fuel. Bulk volumes are purchased from either the state bid or, if this price seems high, from a separate bid process, within or outside a bid consortium.

Over the past three years the price of gasoline and diesel has increased by almost \$1.50 per gallon; presently, we are paying (inclusive of fuel delivery costs) about \$2.50 per gallon. On average, over the past six years, the Town of Natick purchased approximately 170,000 gallons (gasoline and diesel combined) of vehicle fuel annually; our use during this period has been very consistent, with the exception of 2002 when a near record amount of snowfall occurred.

We separately bid the purchase and delivery of vehicle fuel. The cost of purchase of the fuel is based on the “dock price” plus a competitively bid “increment.” The increment

does not fluctuate as it is set through the bidding process, but the dock price fluctuates greatly. We also competitively bid the delivery of fuel and often combine such bids with other local towns to help lower the per gallon delivery cost.

Over the past three years annual increases in the price of heating fuel have ranged from a 60% increase for natural gas to a 135% increase for #2 fuel oil, with #4 fuel oil increasing 87% over that same period. In general, the newer more energy efficient buildings in town are heated by natural gas while the older less efficient buildings are heated with either #2 or #4 fuel oil. To take advantage of the price volatility of heating fuels, the town uses various strategies to get the best price available from suppliers. This includes joining consortiums to receive favorable volume pricing and both near and longer term price commitments negotiated with suppliers, directly.

The town has a very favorable three year contract with Trans Canada, ending in January 2008, to supply electricity at a price of 5.5 cents per kilowatt hour. Subsequent to participation in a regional bidding process, the town contracted with Trans Canada for a five year period to supply electricity at a rate of 9.78 cents per kwh; with estimated average pass-through charges, the final rate is estimated to be 10.324 cents per kwh. While this represents a significant increase, the favorability of this rate is evident when compared with subsequent regional bidding rates of 10.610 cents per kwh, as well as more recent three month rates of 12.4 cents per kwh.

5. Opportunities for Further Improvements

With the dual objectives of saving money and protecting the environment, the town continues to look for ways to conserve energy and to purchase energy at the best possible value. In addition to assuring the energy is used efficiently, the town is continuously looking for new opportunities and incentives to help manage energy consumption and the impact of our energy usage on the environment.

The town will continue to look for and participate in private and government incentive energy programs. While many of the energy improvement programs require large capital investment or have unacceptably long payback periods, others are under review or consideration, including:

1. The “MotorUp” Premium Efficiency Motor Initiative that provides rebates when replacing pumps with more energy efficient variable speed pumps.
2. Joining the Energy Pilot Program for Municipalities sponsored by the Massachusetts Technology Collaborative.
3. Joining the EPA Energy Star Program (which we have already joined) and the associated Municipal Challenge Program through which further opportunities to conserve energy may be identified.
4. Continued evaluation of opportunities to use alternative fuels and renewable energy.

5. Continued evaluation of energy efficiency and environmental considerations when purchasing equipment and products for the town (such as Energy Star products).
6. Joining the Communities for Climate Protection program to help identify and plan for reductions in greenhouse gases.
7. Working with the federal EPA and their contractor GETF to develop a document focused on reducing energy use and costs at water and wastewater treatment plants. The town was asked by EPA to participate because of its experience in developing an Environmental Management System as part of the ISO 14001:2004 Certification for the Springvale Water Treatment plant; a similar management system focused on energy use will be developed.
8. Participating in the ISO-NE Demand Response Program. The Program allows the town to cut back electricity use in certain buildings and rely on emergency generators to light and cool the buildings during peak demand during a Level 4 event (imminent threat of a power blackout). By agreeing to use internal power generation during pre-blackout events, the town will help keep the “lights on” in the community and receive payments from ISO-NE of at least \$14,000 annually.

I would like to acknowledge and thank Bob Bois, Environmental Compliance Officer; Charles Sisitsky, DPW Director; John Craig, DPW Business Manager; Cory Lovett, Supervisor of the DPW Division of Building Maintenance; Tom Collins, Supervisor of the DPW Division of Vehicle Maintenance; and Bob Graham, Director of Facilities for the School Department for their assistance in preparing this report and commend them for their ongoing commitment and creativity with respect to identification and implementation of energy conservation efforts.

This report is not intended to be all-inclusive but rather reflective of our extensive and ongoing efforts to continuously improve our energy efficiency. We welcome new ideas or questions regarding any of our existing programs.

Sincerely,

Martha L. White,
Acting Town Administrator